

Secretary of Resources Douglas Wheeler,
Chair of Flood Emergency Analysis Team
Senator Dianne Feinstein
Congressman Richard Pombo
State Senator Jim Costa
State Senator Pat Johnston
Assemblyman Mike Machado

The undersigned parties urge that you work with us and other appropriate parties, including CAL FED, to develop plans and legislation that will lead to measures which would upgrade flood protection in the San Joaquin River System, including the south Delta. We believe the river system can be improved to significantly reduce the incidence of levee breaks that occurred in January of this year. Engineering studies will be needed to develop details, but we describe below the basic approaches that we believe should be pursued unless hydraulic and cost analyses demonstrate that other approaches are preferable.

BACKGROUND

Most of the levees that failed (or whose failure broke other levees) downstream of the mouth of the Merced River are Corps "Project Levees" that failed because the levees were structurally inadequate and not because they were overtopped. The structural inadequacy appears to be related to insufficiency of the cross-section to withstand the experienced rate of flow and consequent river stage. This results in seepage, boils, sloughs, and blow-outs.

The flow capacity of the river channel along the valley floor has been reduced by lack of channel maintenance. The riverbed in long reaches of channel has been filled with sediment (as much as eight feet in places) which then is sometimes partially covered with brush. There is now no agency north of the Merced River with the authority and responsibility to maintain the river channel. Furthermore, environmental agencies typically oppose and prevent the granting of Corps, Fish and Game, and Regional Water Quality Control Board permits needed to perform channel maintenance in a feasible manner.

There are a few places where flow is restricted by inadequate road bridges or inadequate floodway width between levees. In most cases, however, the problem is not inadequate width of floodway.

BASIC APPROACHES TO REDUCING FLOOD STAGES

There are two basic approaches to reducing flood stages. One is to increase the flow capacity of the system and the other is to increase the ability to store water during high flows.

FLOW CAPACITY

(1) The Delta. Increased flow capacity must be provided first at the lower end of the system. Little will be accomplished if upstream improvements simply dump more water into the Delta and aggravate flooding problems there. Recalculating incremental flood stages from upstream channel capacity improvements, revising Delta levee standards, and strengthening Delta levees to the new standards must precede increasing the capability of the tributaries to convey flood waters to the Delta which otherwise are delayed by upstream levee failures. Once this task has been addressed, the improvements should proceed up the river.

(2) The Lower San Joaquin. The terrain and the existing land uses in the Lower San Joaquin where it enters the Delta are such that new bypasses would be difficult. However, they may not be necessary. The river stages both below and upstream of Mossdale at a given river flow can be reduced by the following.

(a) Dredge Middle River Downstream of Old River

The upper few miles of Middle River are severely choked with sediment and bamboo, and the levees in some portions may be too close together. The channel should be dredged and cleaned to the capacity of downstream Middle River reaches. Levee setbacks should be considered at choke points. Dredge spoils should be used to strengthen the levees from the head of Old River down past the dredged portion of Middle River.

(b) Increase the Bypass Capacity of Paradise Cut

Paradise Cut has a rock weir to accept overflow from the river into the Cut. The capacity of the weir can be increased by widening and/or lowering. The Paradise Cut channel can be dredged for increased capacity, and the dredge spoil used to strengthen the levees along the Cut.

(c) Dredge and Maintain the San Joaquin River Channel

Start a program of dredging and maintaining the main channel of the San Joaquin River and of Old River and Grantline Canal. This channel restoration should start at the lower end and extend upstream past the city of Grayson. Many miles of channel have been aggraded in recent decades by as much as eight feet of sediment. The sediment should be used to substantially increase levee cross sections and reduce the slope of levee banks.

(d) Eliminate chokes in the river system

It is alleged that bridges such as at Highway 132 are restricting flow capacity. There may also be some locations where the width of the floodway is inadequate to handle flows that are

within the capacity of most of the river reach in question. If so, these chokes should be removed.

Again, it is imperative that the capacity of the downstream system must be sufficient to avoid an increased downstream flood threat.

RETENTION DOWNSTREAM OF DAMS

Major rainstorms often result in substantial peak flows that typically last only a few days. These flows include runoff that originates below the dams. Prior to land development and levee construction these peak flows were absorbed by overflow onto wetlands and then flowed back to the river as river stages fell. The U.S. Army Corps of Engineers made a reconnaissance study in the early 1980's that indicated that this overflow could be restored in a controlled manner on currently established wetlands and could absorb more than 100,000 acre feet of peak flow. This concept was adopted in the San Joaquin River Management Plan and is included in its February 1995 report. It should be implemented.

It is important not to confuse these measures of transient impoundment with bypasses which can increase upstream flow capacity above downstream flow capacity.

NEW ONSTREAM DAM CAPACITY

A significant opportunity to increase reservoir storage in the San Joaquin river system is to raise Friant Dam. The watershed above Friant generates about the same runoff as the watershed above New Don Pedro Dam on the Tuolumne. Yet Friant (Millerton Lake) can impound only about one quarter as much water as Don Pedro. The USBR determined in 1982 that the reservoir capacity could be more than doubled. During the twenty-six years starting in 1970, records show that Friant flood control releases came to about seven and one-half million acre feet. It appears that more than half of these releases could have been avoided with the enlarged dam if it was operated in the manner proposed by the South Delta Water Agency. This saving in flood releases would provide about four million acre feet of yield for controlled release for instream uses, water quality improvement in the river, increased power generation, and high quality increased water supply south of the Delta. The proposal was endorsed by the San Joaquin River Management Plan in 1995.

INCREASED FLOOD CONTROL WITH EXISTING DAMS

In the design and operation of multipurpose dams there is necessarily a somewhat arbitrary balance between the use of reservoir capacity for dry season water supply versus reserving reservoir capacity for flood control. Any change in that balance would be very controversial. It may be reasonable, however, to pay

those who depend on water supply to take a somewhat greater risk of modest water loss in order to reduce flood risks, pending implementation of the measures previously discussed. This might involve a greater reservoir flood reservation for rain floods through January, and/or a greater reservoir flood reservation for snow melt in years of heavy snow pack.

A similar consideration could be applied to the power dams above Friant. Those dams have the incidental effect of increasing water supply yield, but they do relatively little for flood protection.

LEEVE DESIGN, CONSTRUCTION AND MAINTENANCE

The design of the San Joaquin River levee system should be reanalyzed and levee structures strengthened where necessary to sustain flood stages with recent and anticipated flood flows. These anticipated flood stages can be reduced if and when the measures above are implemented. In the meantime, all damage to the levees caused by the current flood should be repaired as soon as possible.


The primary purpose for levees should be flood control. The structural section necessary to sustain the anticipated flood stages with an adequate factor of safety and the waterside and landside slope areas necessary for floodfight should not be compromised or obstructed with vegetation or other encroachments. If retention of vegetation is mandated the levee structure must be further strengthened to provide the same safety factor.

CONCLUSION

If all of these measures were implemented we believe that the San Joaquin River System could handle a flood event such as happened this year with substantially reduced risk of levee failures all the way through the Delta.

Thank you for your consideration.


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